

400 T+L TANNIN & LIGNIN

1 - 25 ppm \ 120 Tests

Reduction of Phospho-molybdotungstic acid

- Fill 16mmØ tube with a fully extended syringe (3.2ml) of sample
- Add 3 drops of **TL-1** and mix
- Add 3 drops of **TL-2** and mix
- Set aside for 3'
- Switch on the Photometer 660
- enter und press
- Set filter as indicated to 690nm and press for 400 T+L
- Insert tube with plain water and press
- Insert tube with prepared sample and press
- Record as Tannin & Lignin ppm (mg/l)

Water takes up soluble organic matter from plants and soils in addition to inorganic matter from surrounding rocks. In the latter case it is possible to determine each component separately by colorimetry. In the former colorimetric analysis traditionally limits one to a collective value of a large number of substances referred to as *Tannin & Lignin*. Lignin is the structural material of higher plants. Wood is composed to of 20-30% of lignin, acting as the framework for holding its major components cellulose and hemicellulose together. In contrast to many tannins, the solubility in water is low and resistance against bacterial degradation high, as evident from the often remarkable preservation of historic wooden artefacts in wet environments. Sulfites are used to leach lignin out of wood in paper manufacture producing sugars, carboxy-acids and ligninsulfonic acids of poor biodegradability. The around 12,000 tannins can be divided into stable condensed polymer and hydrolyzable varieties. Soils contain them as part of the numerous soluble yellow to brown substances derived from decaying plant material generalized by the term *Humic Acids*. Consisting of condensed aromatic rings with OH-groups, the polyphenol ability in maintaining heavy metals in solution by chelation prevents their deposition as sludge. This has a negative effect on the self-cleaning capacity of surface waters. *Folin & Ciocalteu* (1927) determined such substances by their capacity to reduce a mixture of practically colourless phosphomolybdic- and phosphotungstic acid (TL-1). In a medium alkalized with TL-2 this produces, broadly analogous to a photographic developer, grey-blue phospho-molybdotungstates by a reduction of the average Mo-W oxidation state from 6 to 5.6. © dr.bodart 0106